Lending Club- A Case Study

Unveiling loan default patterns and implications in lending practices

What is Lending Club?

An online peer-to-peer lending platform connecting borrowers and investors. LendingClub revolutionizes lending by offering accessible loans to individuals and small businesses.

How?

Borrower: Applies online, undergo credit assessment, and have their loan requests listed on the platform.

Investors: Diversify portfolios by funding loans based on risk profiles.

Problem Statement

Lending loans to ‘risky’ applicants is the largest source of financial loss (called credit loss). Borrowers who default (Do not pay-off borrowed money) cause the largest amount of loss to the lenders.

Goal

To gain insights into the key drivers of loan default, which are highly indicative variables of default. This valuable knowledge can be leveraged by the company for portfolio management and risk assessment purposes.

Approach

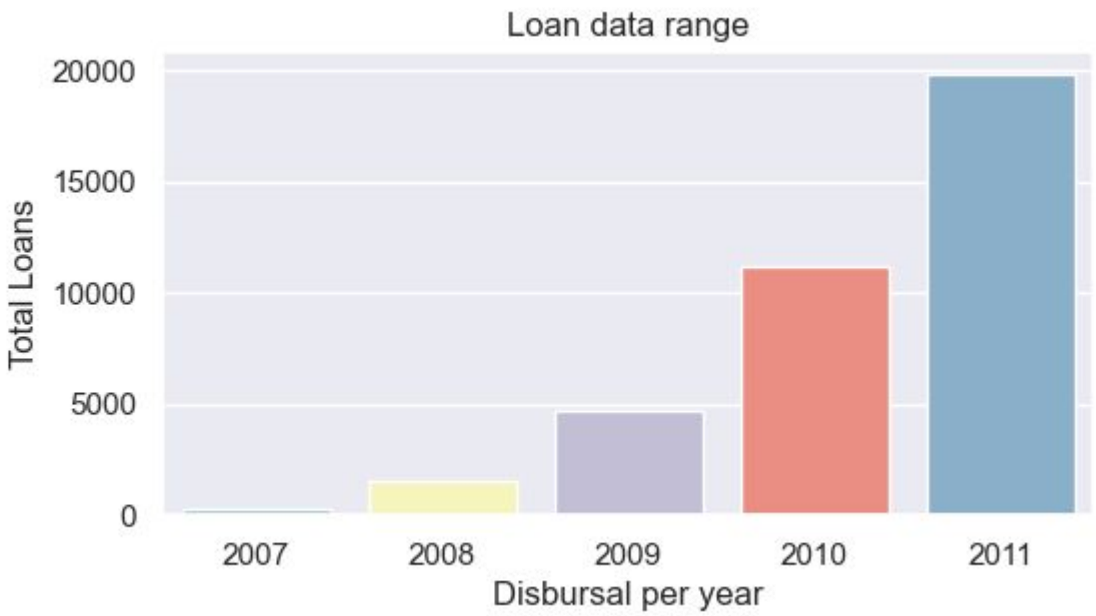
01 **Data Exploration**

02 **Data Transformation**

03 **Actionable Insights**

04 **Conclusion**

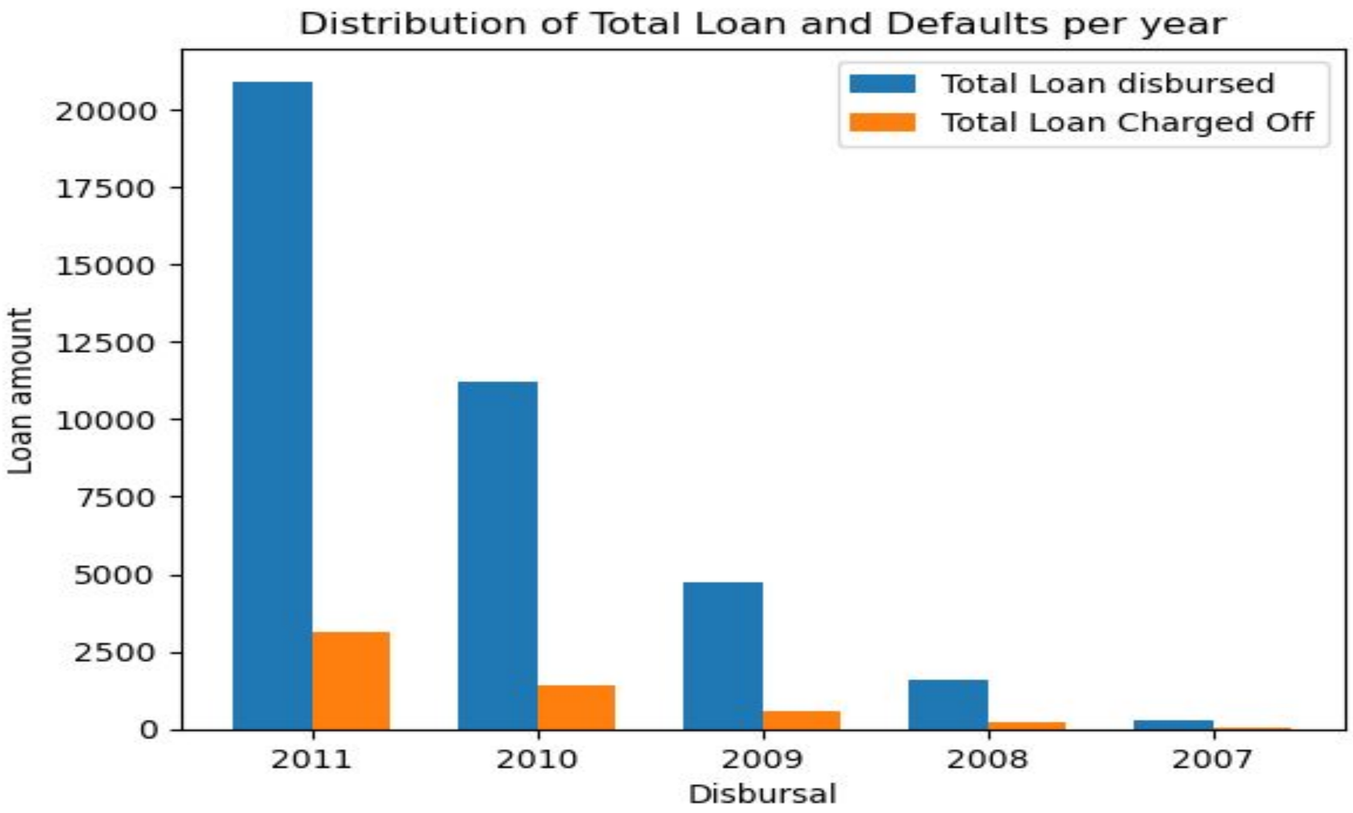
Data Source Range



Data Cleaning steps

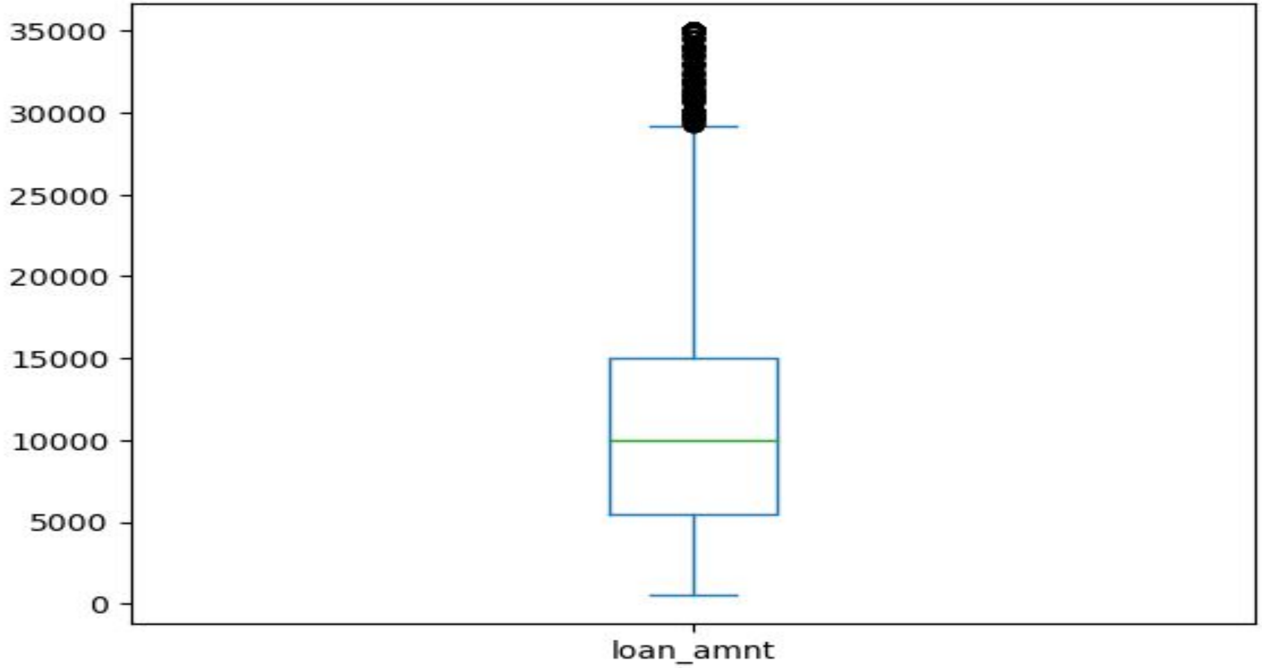
- Imputing or removal of columns with Null values
- Removal of unwanted characters that interfere with calculations viz. %,>
- Dropping rows where imputing with mean/median/mode introduces bias
- Converting data types to facilitate Categorical / Quantitative Analysis
- Deriving new columns from existing for additional insights
- Binning continuous variables to plot as categorical variables

Distribution of Total Loan and Defaults per year



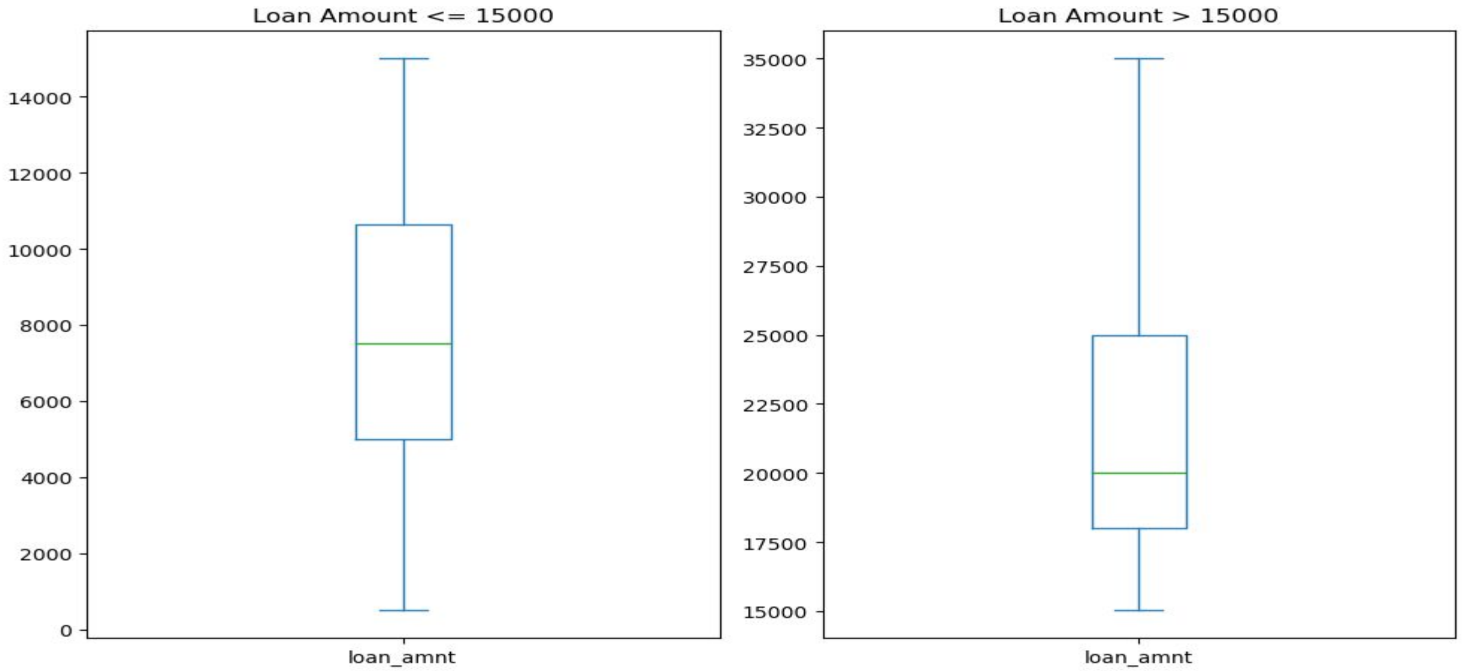
Loan Amount:

We noticed that 75% of the Loans are in the range of 15000 and below. Plotting the spread above and below the 75th percentile (15000)

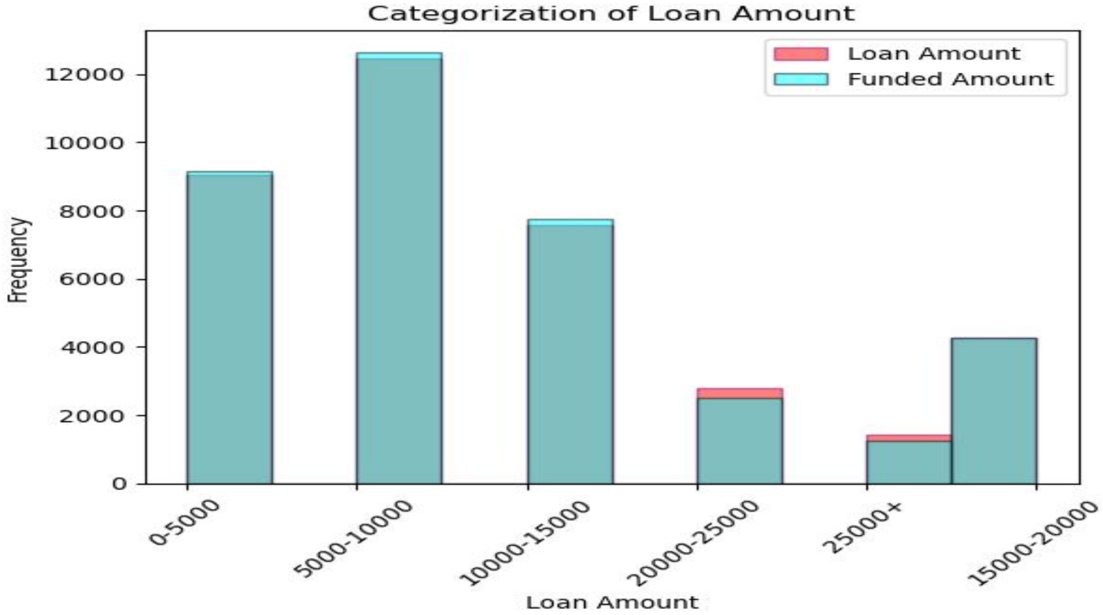


Loan Amount:

On processing the outliers in a separate plot we see that removing outliers will lead to missing out on insights that we will be able to derive against other variables



Loan Amount requested vs Loan Amount funded

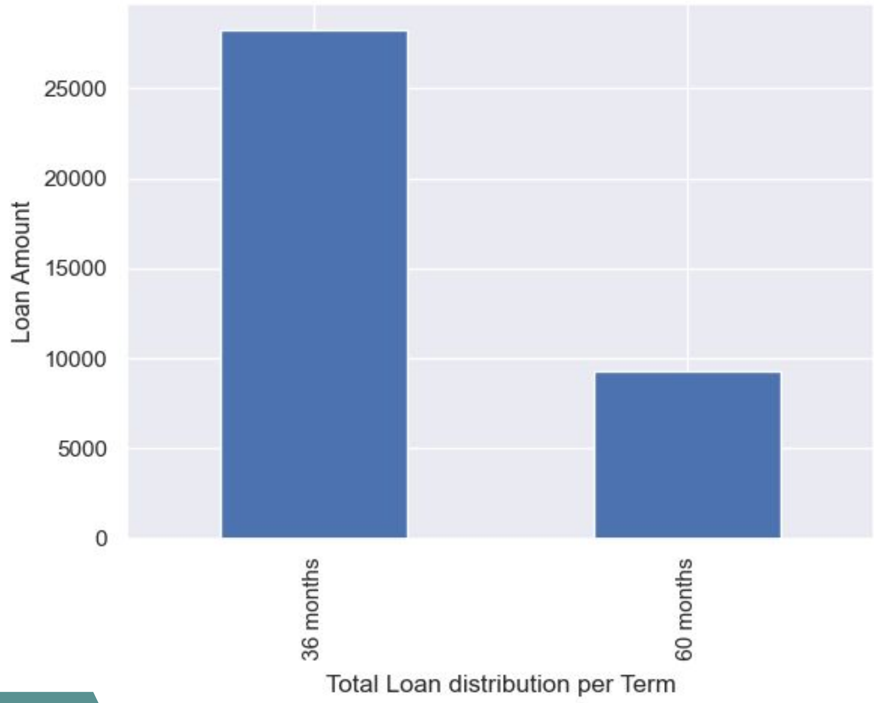


- **Highest amount of loans in the 8000-10000 region**
- **Total Loan amount requested is being funded mostly**
- **At the higher end of the loan amount range we see a trend where Funded amount is lesser that requested Loan amount**

Ratio of Total Loan Amount Paid-Off to Loan Amount Defaulted

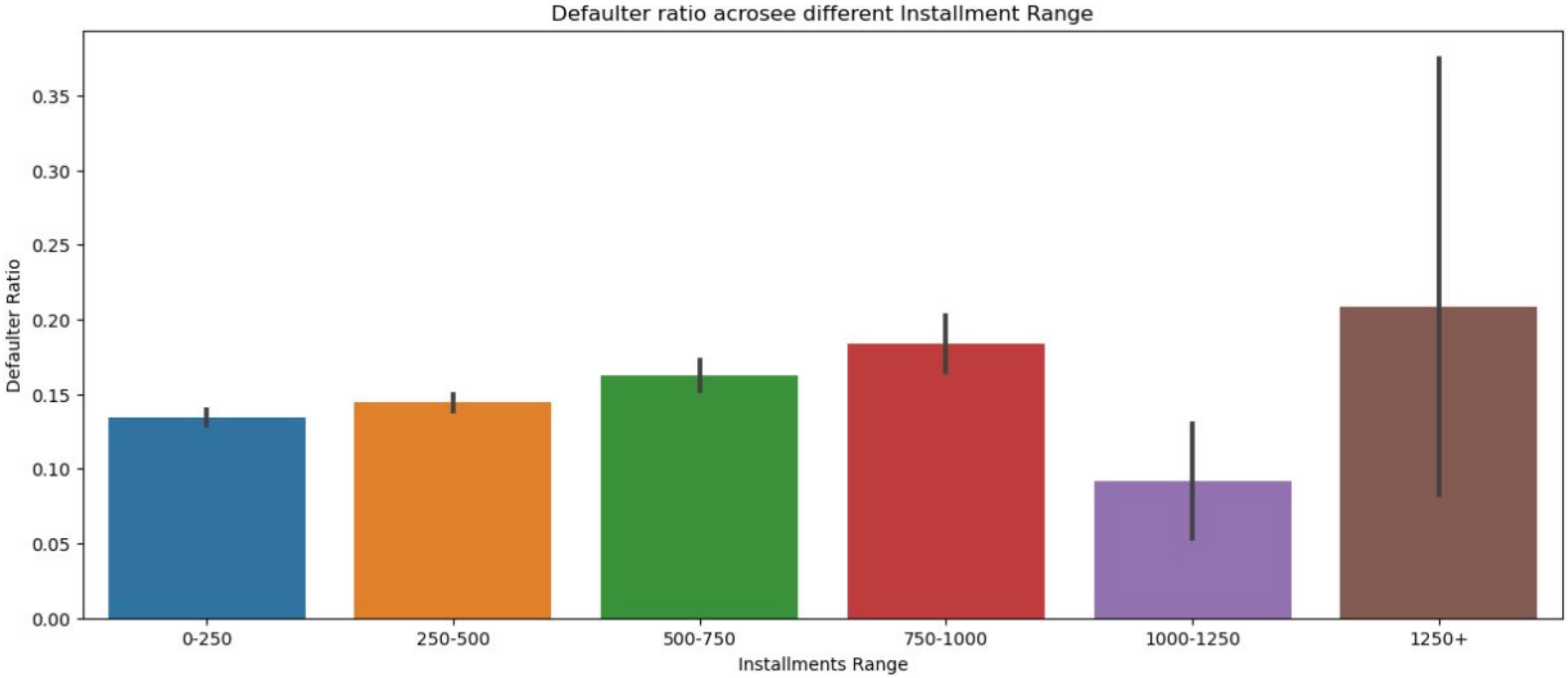
14% of total loans disbursed were defaulted

Ratio of Total Loan Amount Defaulted per Term



Higher Default rate seen when Term is Higher

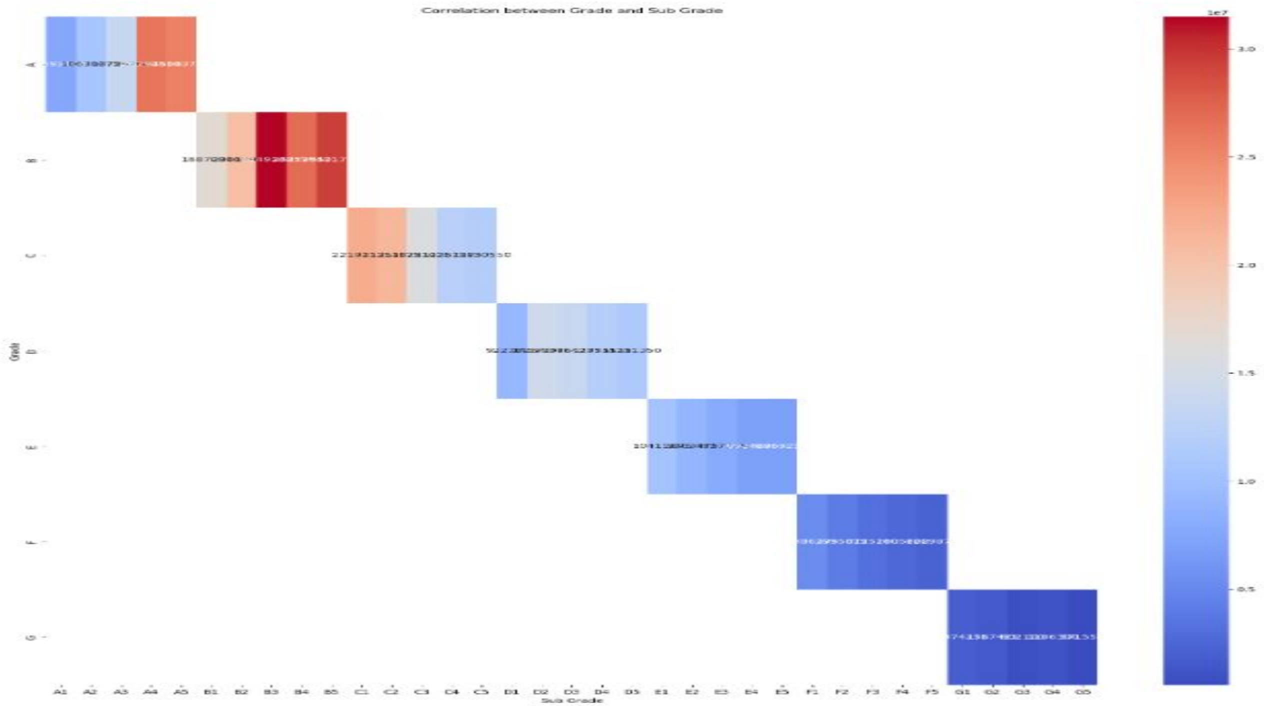
Relationship between Instalments and Defaulter Rate



Loan Defaulter rises with respective to Instalment amount.

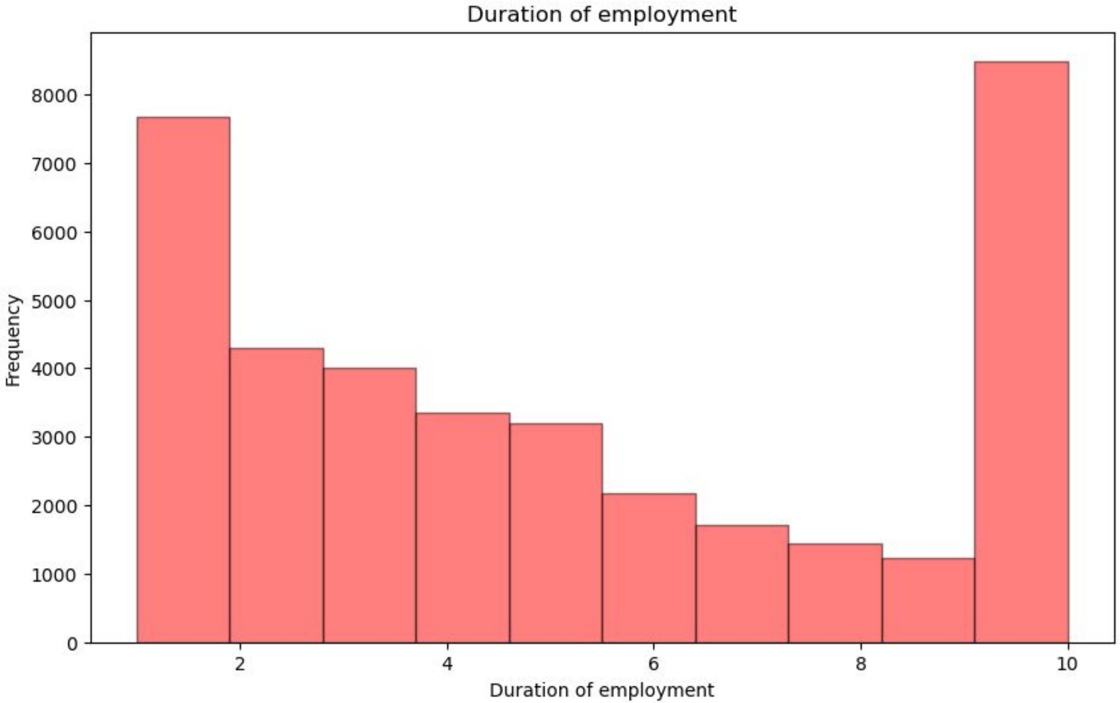
03 Actionable Insights

Grade and Subgrade and their relation to Loan amount/interest rate



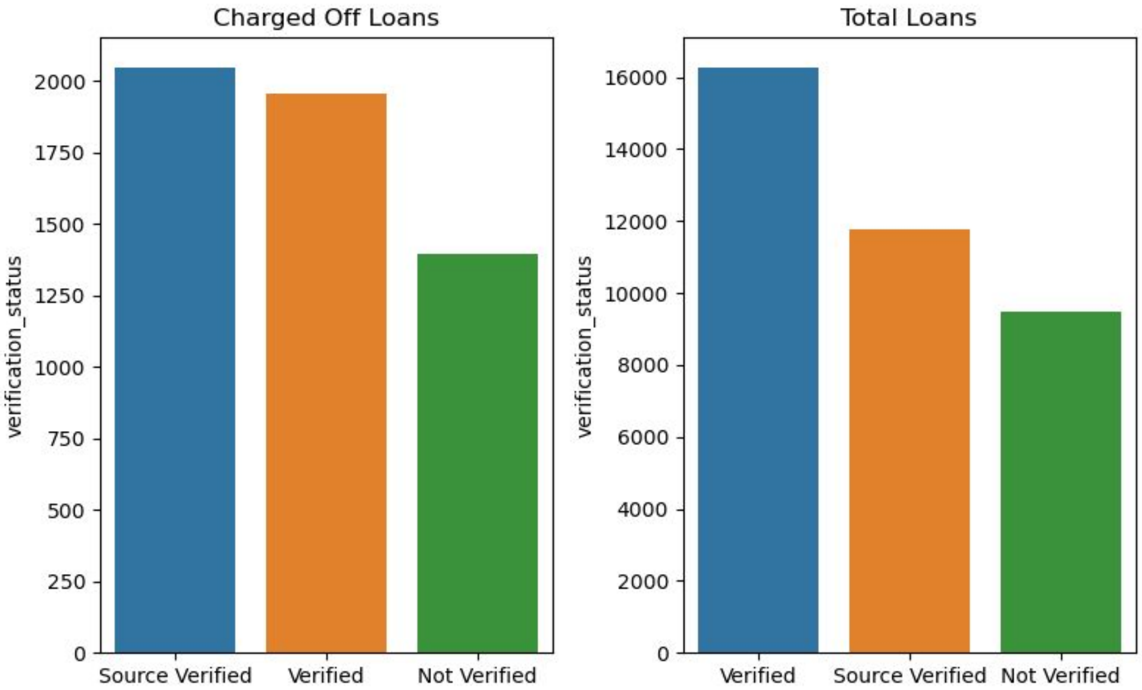
Grades B, A, C, D have the highest amount of loans and in particular subgrade B3, B5, B4 and B2 constituting the most loan amounts

Check emp_length has any affect on Loan Status



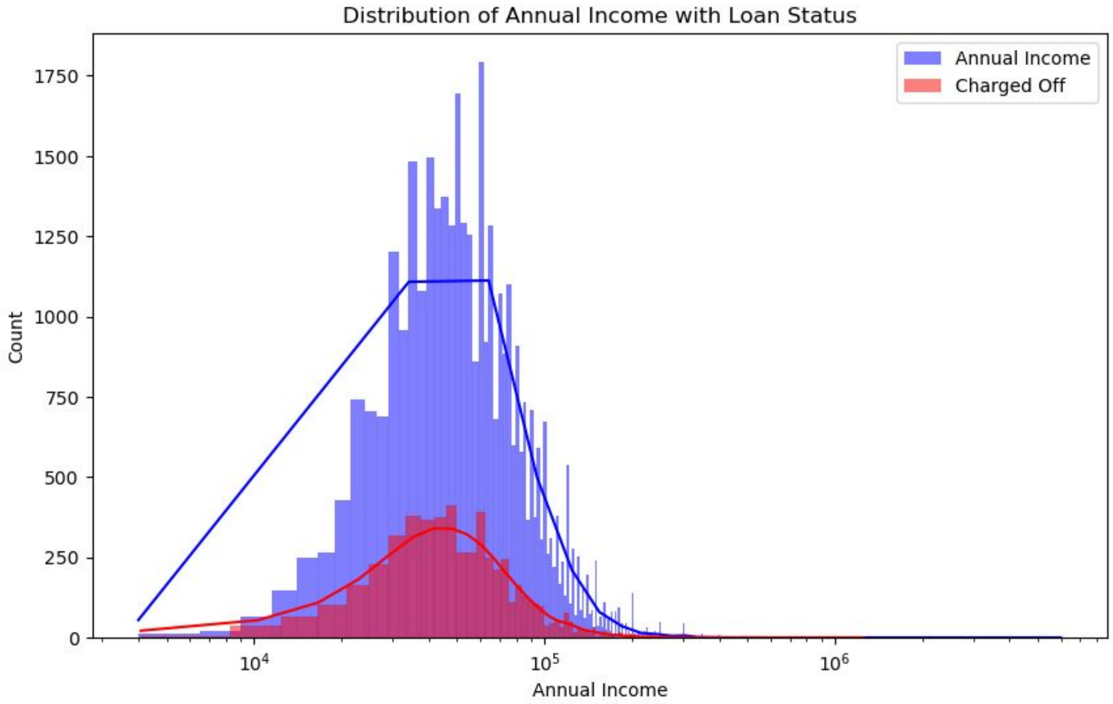
Frequency of borrowers with Employment history of 10 years and above are the highest, closely followed by borrowers with a year or less of employment history.

Verification Status vs Loan Defaulters



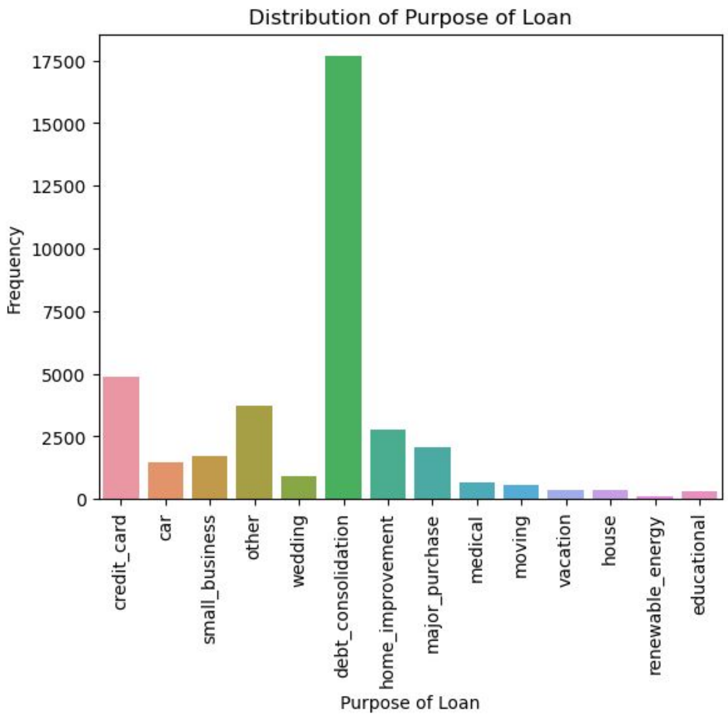
Verified loans getting defaulted show a higher default rate at 16.8%. The Verification process is not effective at all and needs to change

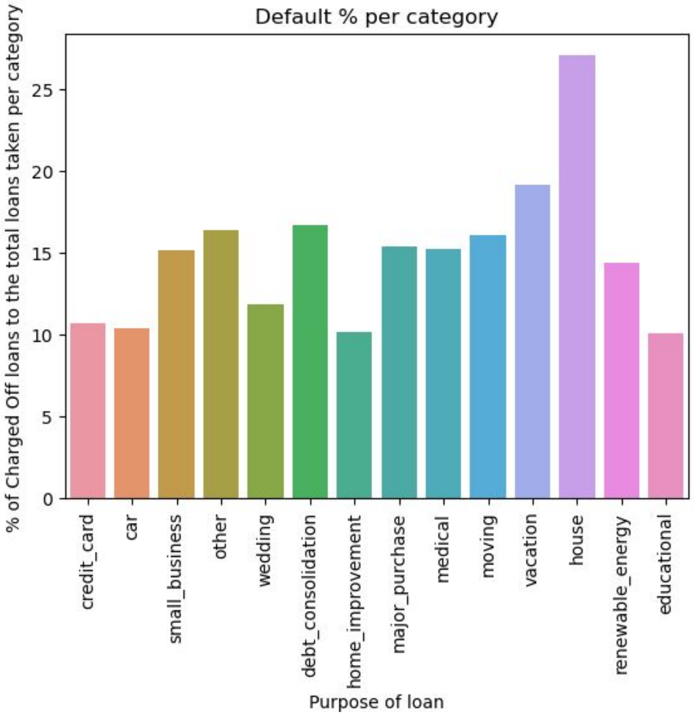
Annual Income vs Loan Default



Higher the Annual Income, lesser the chances of default

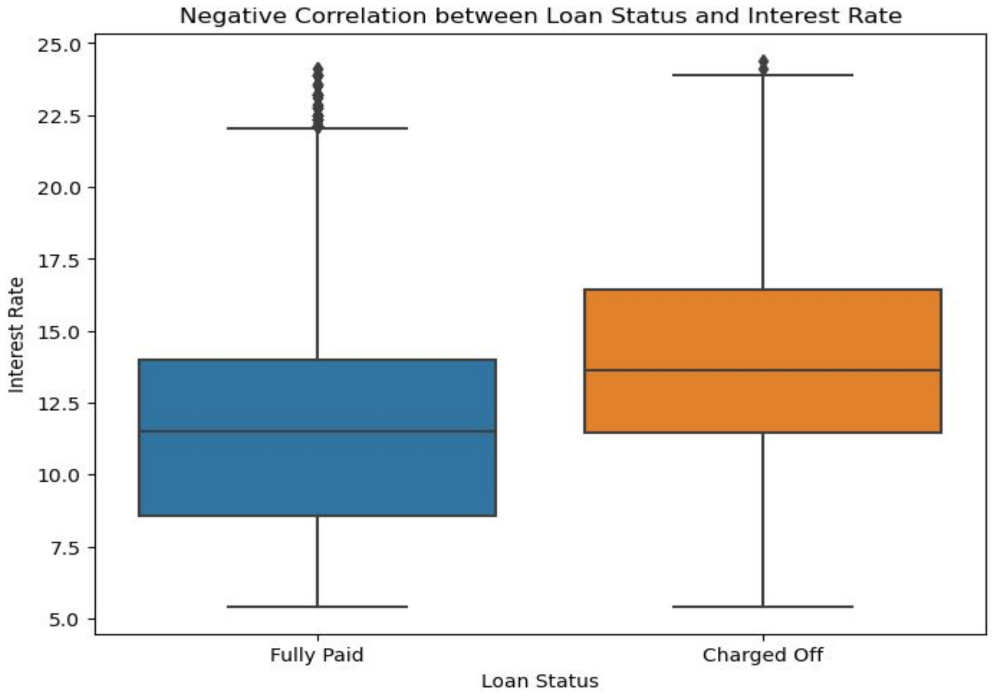
Analyzing Purpose for which the loan was taken.





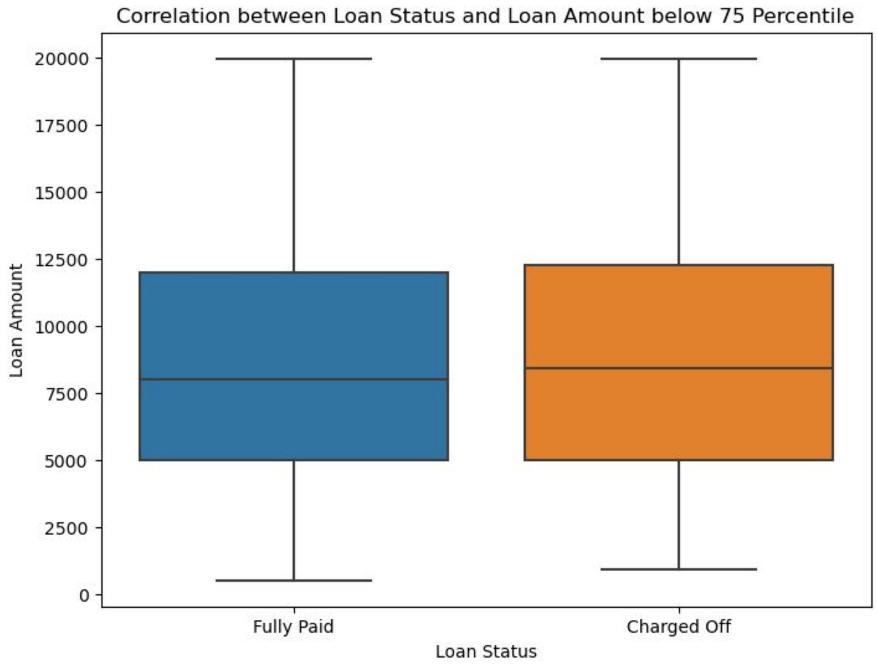
Highest number of loans have been taken for debt consolidation followed by Credit Card. House Loans have the highest defaulter rate

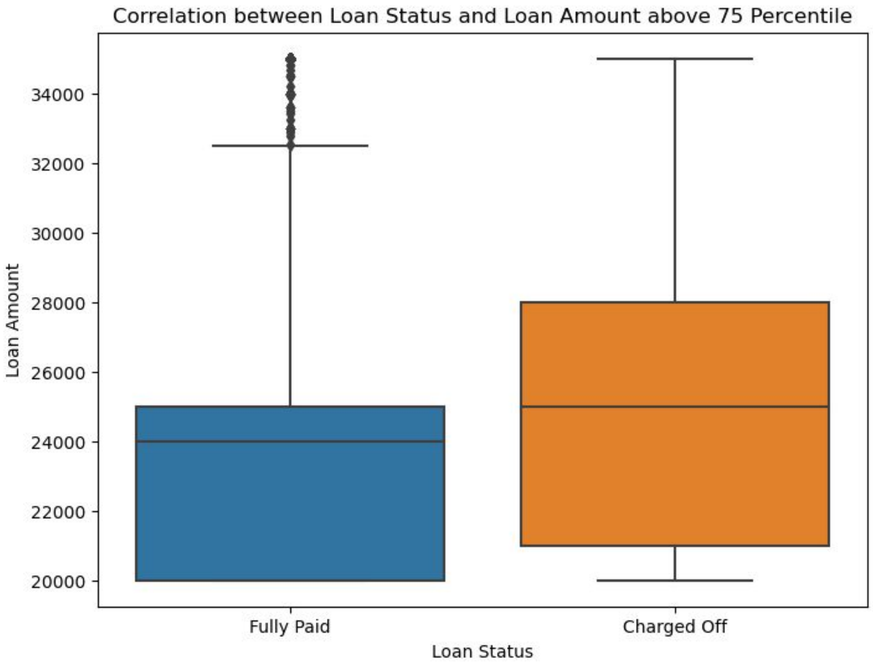
Interest Rate vs Default Rate



Higher the interest rate , higher the chances of default

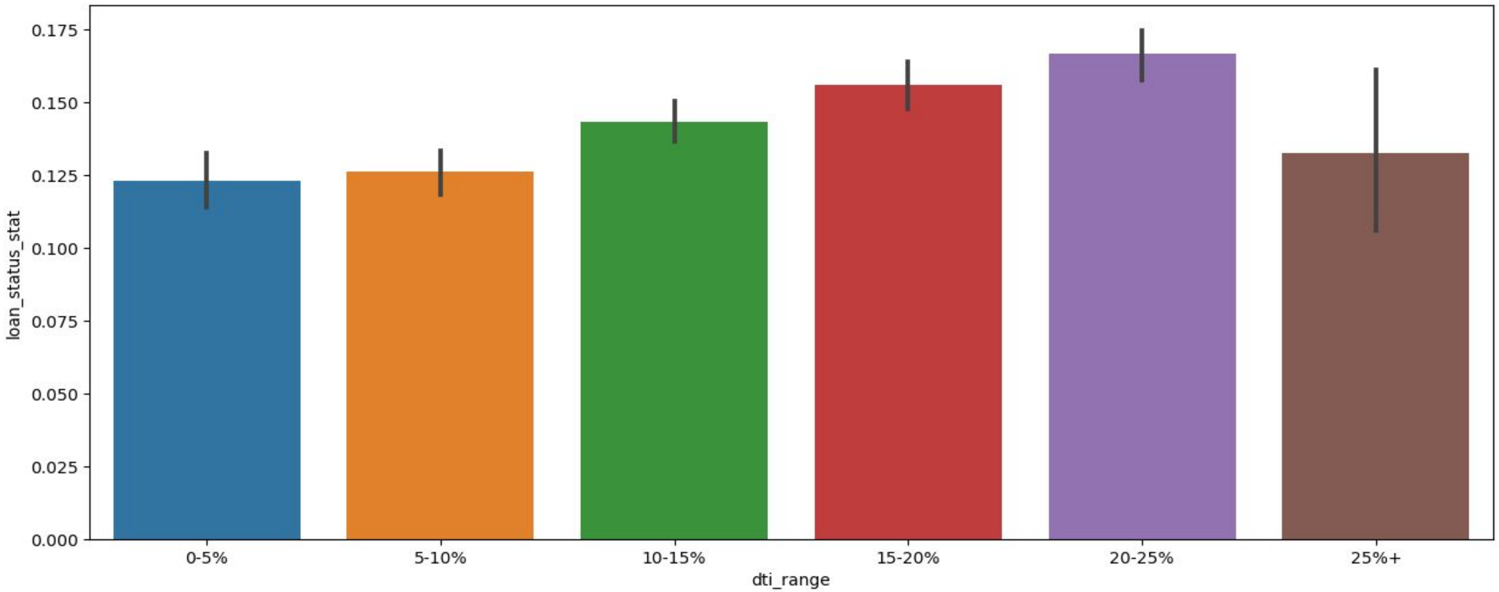
Loan Amount vs Default Rate





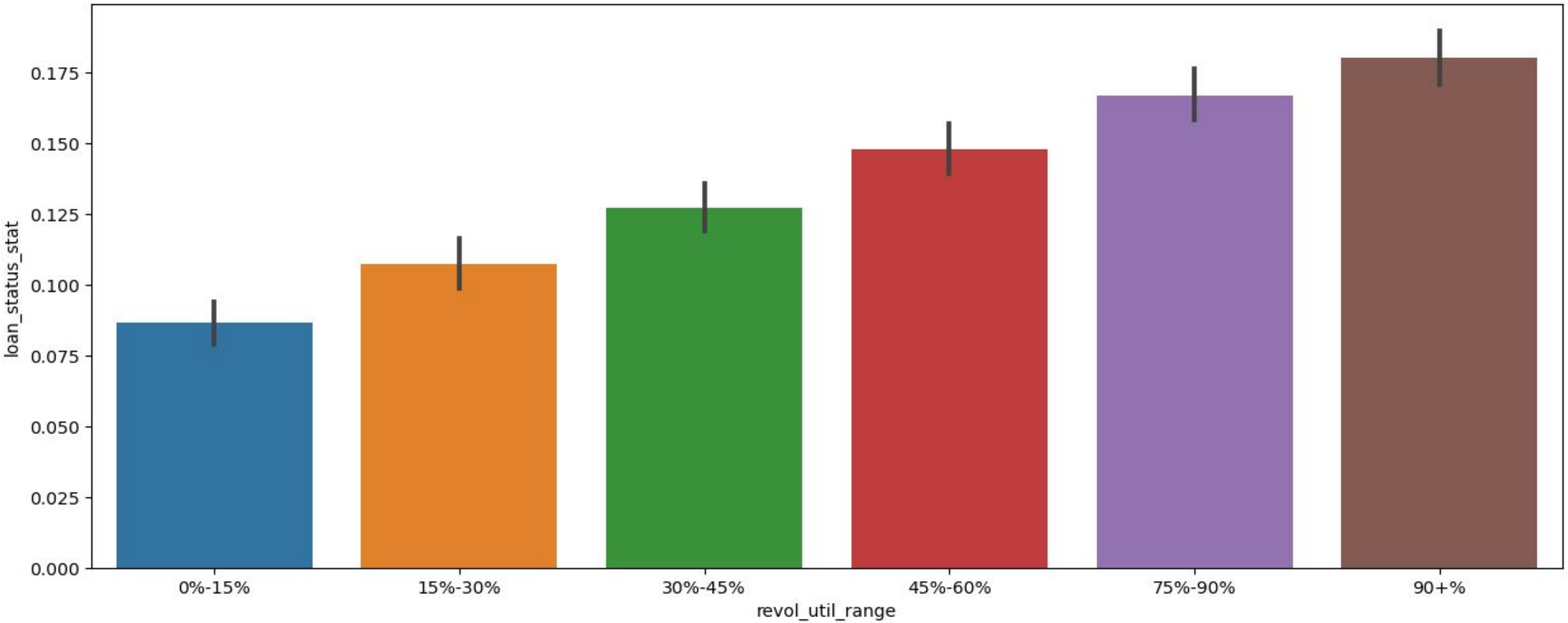
Higher the Loan amount, higher the chances of default

Debt to Income Ratio vs Loan Status



Higher the Debt to Income ratio, higher the chances of default

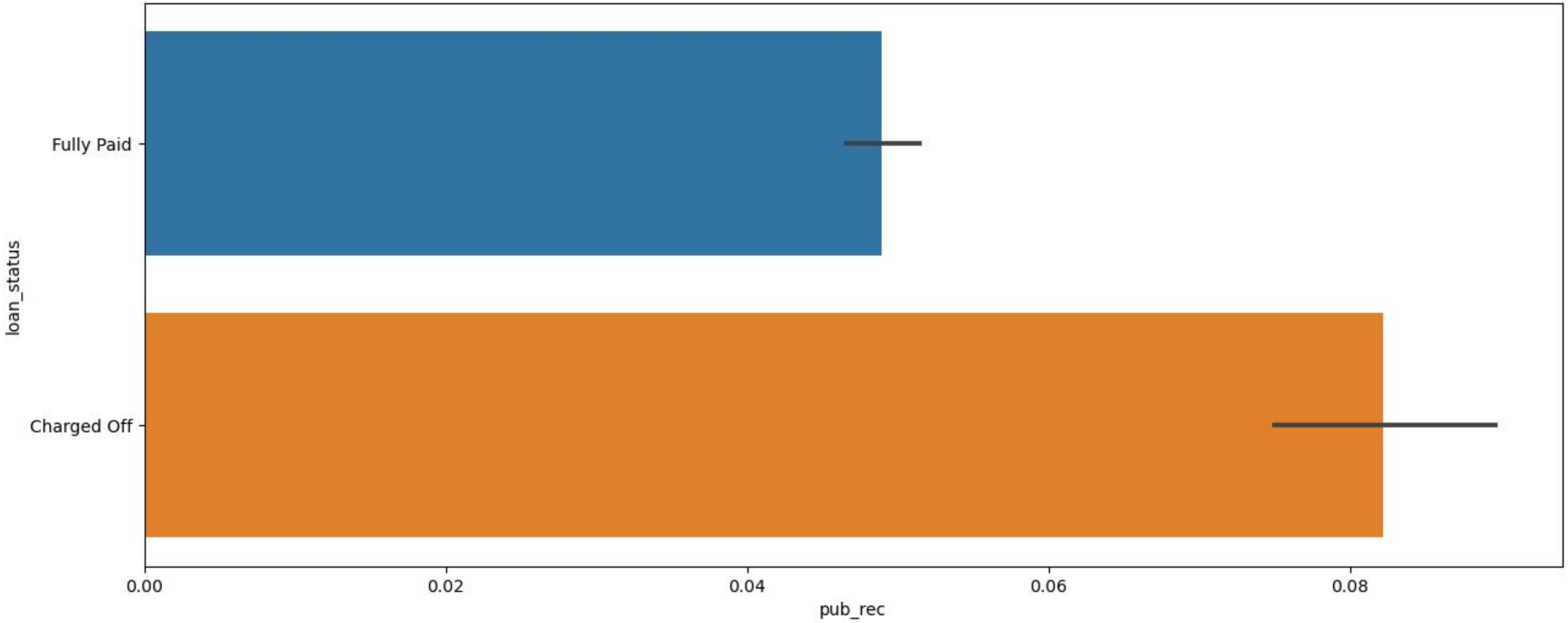
Revolving Utilization Rate vs Loan Status



Higher the Revolving Utilization rate, higher the chances of default

03 **Actionable Insights**

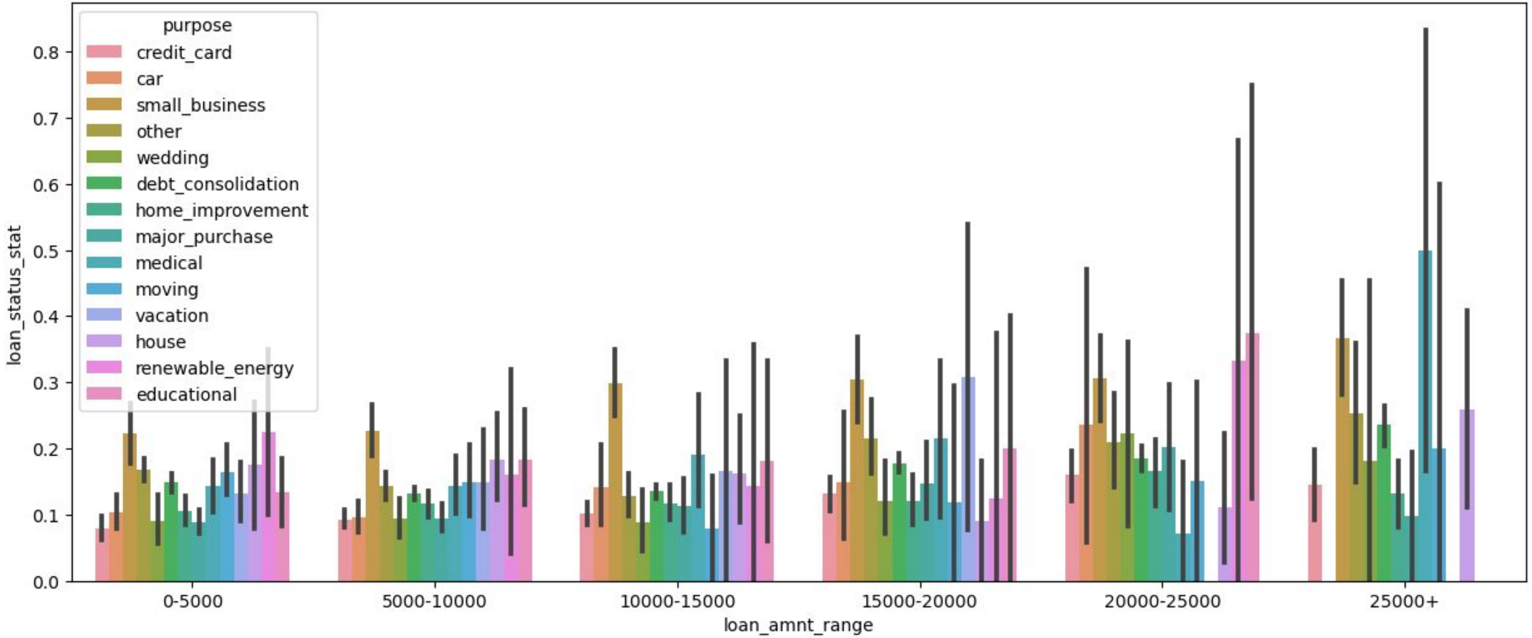
Public derogatory records vs Loan Status



Borrowers who have existing public derogatory records have higher chances of default

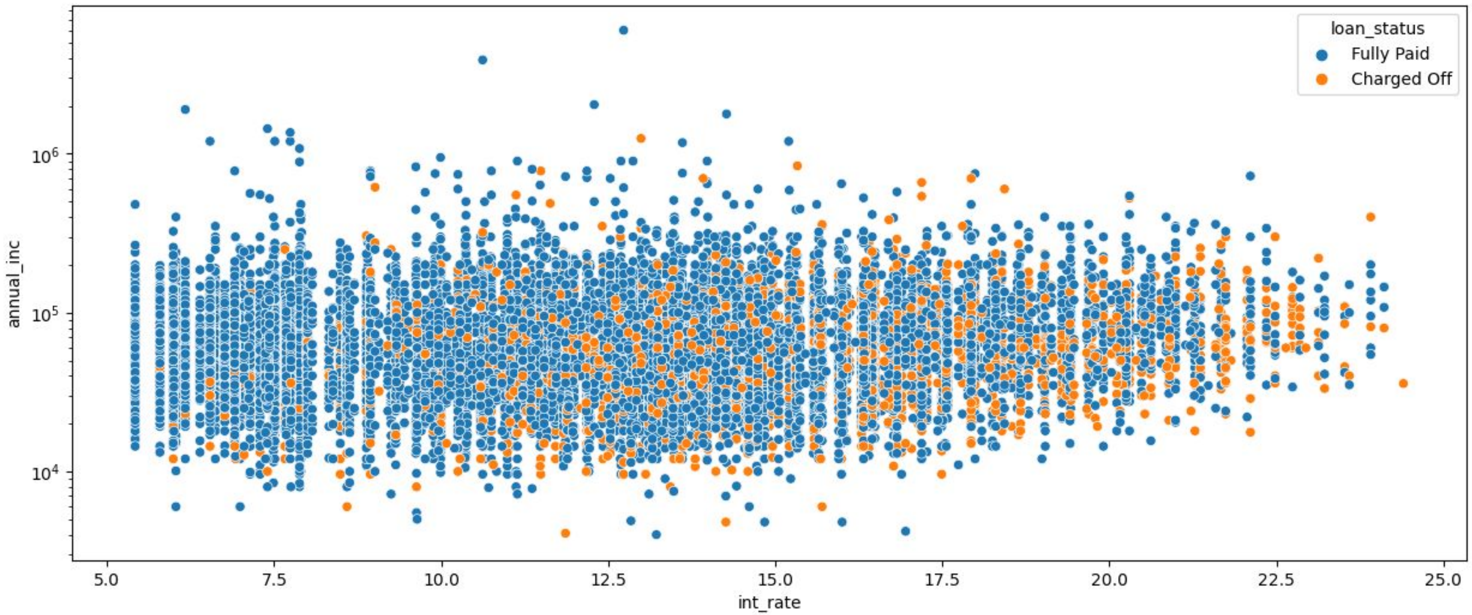
Actionable Insights

Loan Amount and Purpose of loan vs Loan status



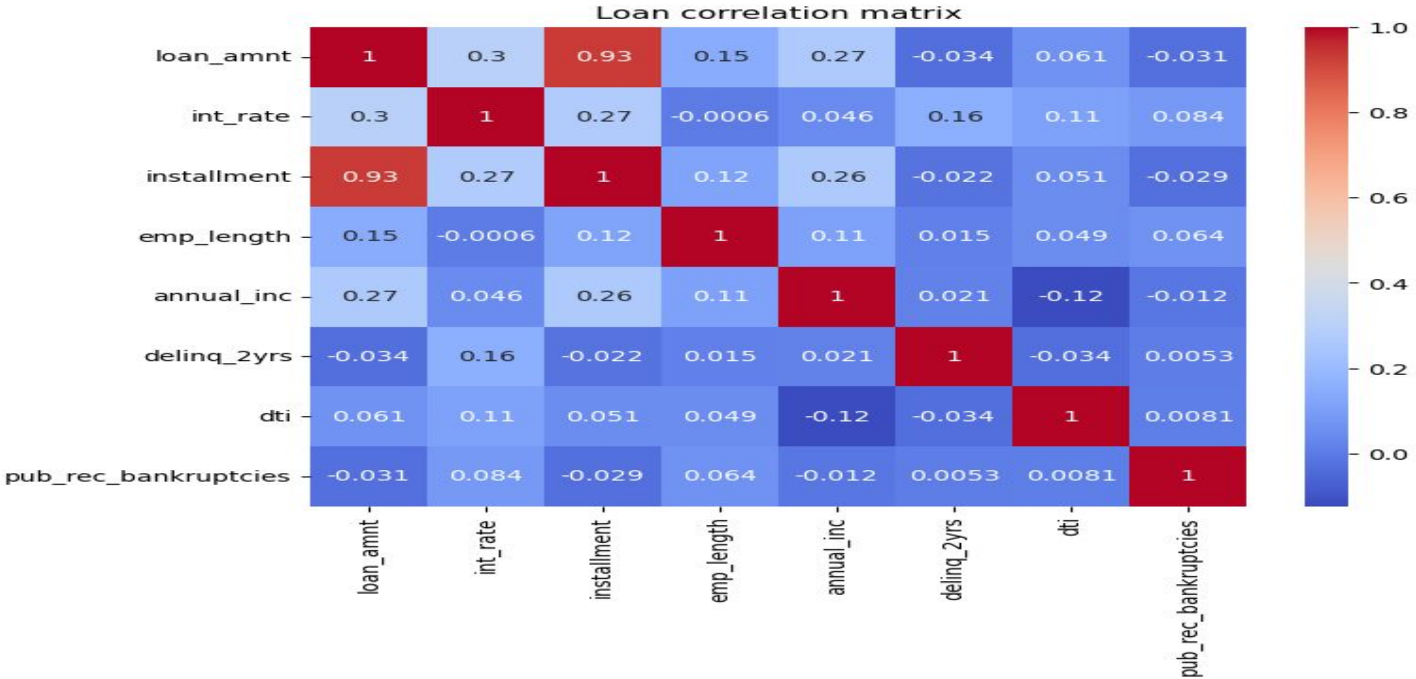
Defaulted Loans increase with increase in Loan Amount irrespective of the purpose, barring Small Business. Small Business loans consistently stay in the High risk zone.
However, for Loans above the 15000 mark, Vacation, Medical, Renewable energy are the top risky Loans

Annual income and int_rate effects on Loan status



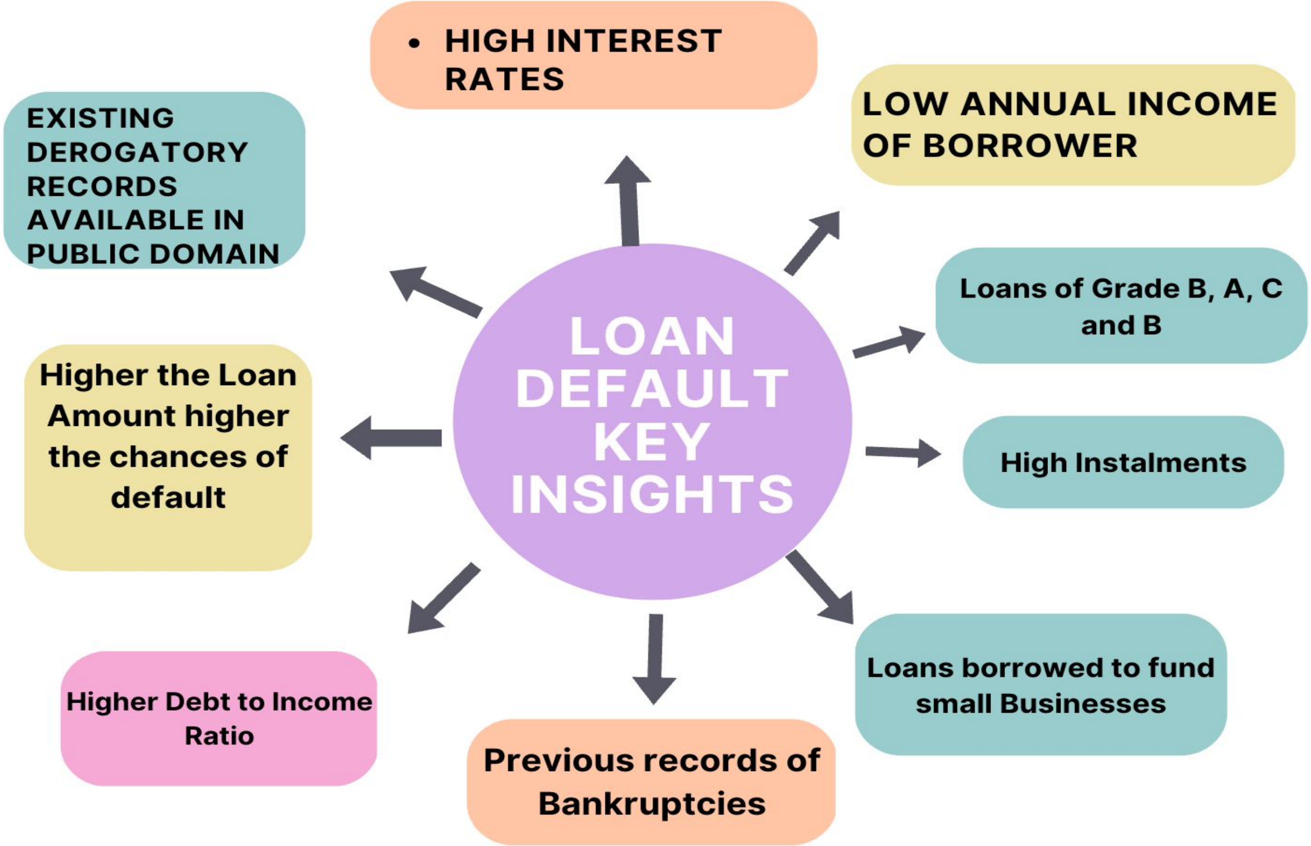
Irrespective of Annual Income of the borrower, the default rate rises with rise in interest rates

Correlation Matrix



We can see a strong correlation between Loan status, Interest rate, loan amount, publicly recorded bankruptcies, verification status, and dti

04 **Conclusion**



Thank you